AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

LISTING OF CLAIMS:

Claim 1. (Currently amended) A purified aldehyde dehydrogenase having the following physico-chemical properties:

a) Molecular weight of 190,000 ± 15,000 Da (consisting of a subunit structure of two α subunits and one β subunit) or molecular weight of 250,000 ± 20,000 Da (consisting of a subunit structure of two α subunits and two β subunits), wherein the α subunit has a molecular weight of 75,000 ± 3,000 Da and the β subunit has a molecular weight of 55,000 ± 2,000 Da;

b) Substrate specificity: active on aldehyde compounds; **[[,]]**

c) Cofactors: pyrroloquinoline quinone (PQQ) and heme *c*; **[[,]]**

d) Optimum pH: from about 6.5 to about 8.0 (for the production of vitamin C from L-sorbosone) or about 9.0 (for the production of 2-keto-L-gulonic acid from L-sorbosone); and **[[,]]**

e) Inhibitors: Co^{2+}, Cu^{2+}, Fe^{3+}, Ni^{2+}, Zn^{2+}, Mg^{2+}, monoiodoacetate and sodium azide.

Claim 2. (Original) The aldehyde dehydrogenase according to claim 1, which is derived from a microorganism belonging to the genus *Gluconobacter* which is capable of producing said aldehyde dehydrogenase.

Claim 3. (Original) The aldehyde dehydrogenase according to claim 2, wherein the microorganism is *Gluconobacter oxydans* having the identifying characteristics of the strain *Gluconobacter oxydans* DSM No. 4025 (FERM BP-3812), a subculture or mutant thereof.

Claim 4. (Original) The aldehyde dehydrogenase according to claim 3, wherein the microorganism is *Gluconobacter oxydans* DSM No. 4025 (FERM BP-3812), a subculture or mutant thereof.

Claim 5. (Currently amended) A process for producing an aldehyde dehydrogenase having the following physico-chemical properties:

a) Molecular weight of 190,000 ± 15,000 Da (consisting of a subunit structure of two α subunits and one β subunit) or molecular weight of 250,000 ± 20,000 Da (consisting of a subunit structure of two α subunits and two β subunits), wherein the α subunit has a molecular weight of 75,000 ± 3,000 Da and the β subunit has a molecular weight of 55,000 ± 2,000 Da;

b) Substrate specificity: active on aldehyde compounds; **[[,]]**

c) Cofactors : pyrroloquinoline quinone (PQQ) and heme c; **[[,]]**

d) Optimum pH: from about 6.5 to about 8.0 (for the production of vitamin C from L-sorbosone) or about 9.0 (for the production of 2-keto-L-gulonic acid from L-sorbosone); and **[[,]]**

e) Inhibitors : Co^{2+}, Cu^{2+}, Fe^{3+}, Ni^{2+}, Zn^{2+}, Mg^{2+}, monoiodoacetate and sodium azide,

which comprises cultivating a microorganism belonging to the genus *Gluconobacter*, which is capable of producing the aldehyde dehydrogenase having the above properties, in an aqueous nutrient medium under aerobic conditions, disrupting the cells of the microorganism, and isolating and purifying the aldehyde dehydrogenase from the cell- free extract of the disrupted cells of the microorganism.

Claim 6. (Original) The process according to claim 5, wherein the reaction is carried out at a pH of from about 4.5 to about 9.0 and at a temperature of from about 20 to about 50°C.

Claim 7. (Currently amended) A process for producing a carboxylic acid and/or its lactone from its corresponding aldose which comprises contacting the aldose ~~aldehyde~~ with a ~~the~~ purified aldehyde dehydrogenase having the following physico-chemical properties:

a) Molecular weight of 190,000 ± 15,000 Da (consisting of a subunit structure of two α subunits and one β subunit) or molecular weight of 250,000 ± 20,000 Da (consisting of a subunit structure of two α subunits and two β subunits), wherein the α subunit has a molecular weight of 75,000 ± 3,000 Da and the β subunit has a molecular weight of 55,000 ± 2,000 Da;

b) Substrate specificity: active on aldehyde compounds; **[[,]]**

c) Cofactors : pyrroloquinoline quinone (PQQ) and heme c; **[[,]]**

d) Optimum pH: from about 6.5 to about 8.0 (for the production of vitamin C from L-sorbosone) or about 9.0 (for the production of 2-keto-L-gulonic acid from L-sorbosone) ; and **[[,]]**

e) Inhibitors : Co^{2+}, Cu^{2+}, Fe^{3+}, Ni^{2+}, Zn^{2+}, Mg^{2+}, monoiodoacetate and sodium azide,

or cell-free extract prepared from a microorganism belonging to the genus *Gluconobacter* which is capable of producing the aldehyde dehydrogenase having the above properties in the presence of an electron acceptor.

Claim 8. (Currently amended) The process according to claim 7 ~~any one of claims 5 to 7~~, wherein the microorganism is *Gluconobacter oxydans* having the identifying characteristics of the strain *Gluconobacter oxydans* DSM No. 4025 (FERM BP-3812), a subculture or mutant thereof.

Claim 9. (Original) The process according to claim 8, wherein the microorganism is *Gluconobacter oxydans* DSM No. 4025 (FERM BP-3812), a subculture or mutant thereof.

Claim 10. (Original) The process of claim 7, wherein the lactone is vitamin C, the carboxylic acid is 2- keto-L-gulonic acid and the aldose is L-sorbosone.

Claim 11. (Currently amended) The process according to claim ~~any one~~

~~of claims 7 to~~ 10, wherein the reaction is carried out at a pH of from about 4.5 to about 9.0 and at a temperature of from about 20 to about 50°C for the production of vitamin C and 2-keto-L-gulonic acid, respectively.

Claim 12. (Currently amended) The process according to claim 10 ~~any one of claims 7 to 11~~, wherein the reaction is carried out at a pH of from about 6.5 to about 8.0 for vitamin C production and of about 9.0 for 2-keto-L-gulonic acid production, and at a temperature of from about 20 to about 50°C for both production ways.

Claim 13. (Cancelled).

Claim 14. (New) The process according to claim 5, wherein the microorganism is *Gluconobacter oxydans* having the identifying characteristics of the strain *Gluconobacter oxydans* DSM No. 4025 (FERM BP-3812), a subculture or mutant thereof.

Claim 15. (New) The process according to claim 14, wherein the microorganism is *Gluconobacter oxydans* DSM No. 4025 (FERM BP-3812), a subculture or mutant thereof.

Claim 16. (New) The process according to claim 5, wherein the cultivation is carried out at a pH of from about 4.0 to about 9.0 and at a temperature of from about 13 to about 50°C.

Claim 17. (New) A process for producing 2-keto-L-gulonic acid or vitamin C from L-sorbosone which comprises contacting L-sorbosone with a purified aldehyde dehydrogenase having the following physico-chemical properties:

a) Molecular weight of 190,000 ± 15,000 Da (consisting of a subunit structure of two α subunits and one β subunit) or molecular weight of 250,000 20,000 Da (consisting of a subunit structure of two α subunits and two β subunits), wherein the α subunit has a molecular weight of 75,000 ± 3,000 Da and the β subunit has a molecular weight of 55,000 ± 2,000 Da;

b) Substrate specificity: active on aldehyde compounds;

c) Cofactors : pyrroloquinoline quinone (PQQ) and heme c;

d) Optimum pH: from about 6.5 to about 8.0 (for the production of vitamin C from L-sorbosone) or about 9.0 (for the production of 2-keto-L-gulonic acid from L-sorbosone); and

e) Inhibitors : Co^{2+}, Cu^{2+}, Fe^{3+}, Ni^{2+}, Zn^{2+}, Mg^{2+}, monoiodoacetate and sodium azide,

or a cell-free extract prepared from a *Gluconobacter oxydans* DSM No. 4025 (FERM BP-3812), a subculture or mutant thereof, in the presence of an electron acceptor.

Claim 18. (New) The process according to claim 17, wherein the reaction is carried out at a pH of from about 4.5 to about 9.0 and at a temperature of from about 20 to about 50°C for the production of vitamin C and 2-keto-L-gulonic acid.

Claim 19. (New) The process according to claim 17, wherein the reaction is carried out at a pH of from about 6.5 to about 8.0 for vitamin C production and of

about 9.0 for 2-keto-L-gulonic acid production, and at a temperature of from about 20 to about 50°C for both production ways.